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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,433	12/28/2001	Young-Sang Byun	3430-0175P	4398
2292	7590	01/08/2004	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			DUONG, THOI V	
			ART UNIT	PAPER NUMBER

2871

DATE MAILED: 01/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,433

Applicant(s)

BYUN ET AL.

Examiner

Thoi V Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-10 and 12-14 ~~is/are~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10 and 12-14 ~~is/are~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the Amendment filed October 06, 2003.

Accordingly, claims 1, 9 and 12 were amended, and claims 3 and 11 were cancelled. Currently, claims 1, 2, 4-10 and 12-14 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 2, 4-10 and 12-14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masazumi et al. (USPN 6,331,884 B1) in view of Gyoda (Pub. No. US 2002/0063842 A1).

As shown in Figs. 5, 6(A) and 6(B), Masazumi et al. discloses a method of forming a liquid crystal layer on a substrate 5A having a sealed pattern 9b', comprising:

preparing a liquid crystal material in a projecting portion consisting of liquid crystal reservoirs S2, S3, S4 and nozzles N2, N3, N4;

emit the liquid crystal material 9a, 9a', 9a" from the projecting portion;

moving the substrate in one direction; and

depositing the emitted liquid crystal material uniformly onto the substrate during the movement of the substrate in the one direction (col. 18, lines 13-40),

wherein the substrate has a black matrix 8 under the sealed pattern; and

where the liquid crystal material start and stop is deposited on a black matrix 8.

Masazumi et al. discloses a method of forming a liquid crystal layer on a substrate that is basically the same as that recited in claims 1, 2 and 4-8 except for applying a vibration and pressure to the projecting portion to emit the liquid crystal material from the projection portion.

As shown in Figs. 4, 6 and 7, Gyoda discloses a method of forming a liquid crystal layer 13 on a counter substrate 112A having a sealed pattern 14A, comprising (paragraphs 108-110, page 9):

applying a vibration and pressure to a projecting portion 50 (ink-jet nozzle) so as to emit a liquid crystal material 61 from the projecting portion,

wherein the projecting portion consisting of a reservoir plate 53 filled with a liquid crystal material, a plurality of spaces 54, a nozzle plate 51 containing a plurality of orifices 57 for discharging the liquid crystal from the space 54;

wherein said nozzle plate adjusts the applied pressure for emitting the liquid crystal material;

wherein the liquid crystal material is emitted and deposited in a vacuum chamber (paragraph 98, page 8);

wherein the vibration is generated by a voltage applied to a resonator 59; and

wherein the generated vibration is transmitted to the projecting portion through a resonating plate 52.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of forming a liquid crystal layer on a substrate of Masazumi et al. with the teaching of Gyoda by applying a vibration and pressure to the ink-jet nozzle so as to reliably and continuously discharge the liquid crystal material (page 3, paragraph 35).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9, 10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gyoda (Pub. No. US 2002/0063842 A1) in view of Masazumi et al. (USPN 6,331,884 B1) and Hashimoto et al. (USPN 6,583,848 B2).

Gyoda also discloses an apparatus of forming a liquid crystal layer on a substrate having a seal pattern as shown in Figs. 6 and 7, comprising (paragraphs 108-110, page 9):

a projecting portion consisting of a reservoir plate 53 filled with a liquid crystal material, a plurality of spaces 54, a nozzle plate 51 containing a plurality of orifices 57 for discharging the liquid crystal from the space 54;

a resonator 59 for generating a vibration; and

a resonating plate 52 for transmitting the vibration to the projecting portion.

wherein the nozzle plate adjusts the applied pressure for emitting the liquid crystal material; and

wherein voltage means are provided for generating vibration in the resonator.

Finally, the apparatus further comprises a vacuum chamber for encompassing the projecting portion, the resonator and the resonating plate (paragraph 98, page 8).

Gyoda discloses an apparatus of forming a liquid crystal layer on a substrate having a seal pattern that is basically the same as that recited in claims 9, 10 and 12-14 except for a stage for moving the substrate in one direction during emitting of the liquid crystal material from the projecting portion uniformly onto the substrate and means for moving the stage. As shown in Figs. 5, 6(A) and 6(B), Masazumi et al. discloses a method of forming a liquid crystal layer on a substrate 5A having a sealed pattern 9b', comprising:

preparing a liquid crystal material in a projecting portion consisting of liquid crystal reservoirs S2, S3, S4 and nozzles N2, N3, N4;

emit the liquid crystal material 9a, 9a', 9a" from the projecting portion;

moving the substrate in one direction; and

depositing the emitted liquid crystal material uniformly onto the substrate during the movement of the substrate in the one direction (col. 18, lines 13-40),

Meanwhile, as shown in Figs. 12-15, Hashimoto et al. discloses a manufacturing apparatus of a liquid crystal device having a stage 31 used for mounting a substrate 21a

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and a driving mechanism comprising a driving source 36 and guiding rails 38 for driving the stage (col. 13, line 30 through col. 15, line 6).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the apparatus for forming a liquid crystal layer on a substrate having a seal pattern of Gyoda with the teachings of Masazumi et al. and Hashimoto et al. by providing a stage for moving the substrate in one direction during emitting of the liquid crystal material from the projecting portion uniformly onto the substrate and means for moving the stage so as to produce a mass-production of liquid crystal display devices (col. 3, lines 13-15).

Conclusion


7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.


JAMES DUDEK
PRIMARY EXAMINER

Thoi Duong 

12/24/2003